# Lectotypification of ten Restionaceae species names from south-west Western Australia

# Russell L. Barrett<sup>1,2,3</sup> and Barbara G. Briggs<sup>4</sup>

<sup>1</sup>Botanic Gardens & Parks Authority, Fraser Ave, West Perth, Western Australia 6005
<sup>2</sup>School of Plant Biology, The University of Western Australia, 35 Stirling Highway, Crawley, Western Australia 6009
<sup>3</sup>Western Australian Herbarium, Department of Environment and Conservation,
Locked Bag 104, Bentley Delivery Centre, Western Australia 6983
<sup>4</sup>National Herbarium of New South Wales, Royal Botanic Gardens,
Mrs Macquaries Rd, Sydney, New South Wales 2000
Email: russell.barrett@bgpa.wa.gov.au

#### Abstract

Barrett, R.L. & Briggs, B.G. Lectotypification of ten Restionaceae species names from south-west Western Australia. *Nuytsia* 19(2): 203–209 (2009). A lectotype is selected for ten names published in 1993 and 1996 by K.W. Dixon, K.A. Meney and J. Pate for species of Restionaceae in the genera *Desmocladus* Nees, *Harperia* W.Fitzg., *Hypolaena* R.Br., *Lepidobolus* Nees, *Loxocarya* R.Br., *Onychosepalum* Steud., *Leptocarpus* R.Br. and *Restio* Rottb. The relevant species originally named in *Leptocarpus* and *Restio* are now included in *Meeboldina* Suess. and *Chordifex* B.G.Briggs & L.A.S.Johnson respectively. Additional collections of the ten taxa involved are also cited.

### Introduction

Lectotypification of the names of one Restionaceae species published by Dixon and Meney (Dixon et al. 1993) and nine Restionaceae species published by Meney et al. (1996) is necessary as all of the type specimens cited in these two papers appear to have been lost. A lectotype is selected for the following eight names, for which no holotype or isotype can be found: Harperia ferruginipes Meney & Pate, Hypolaena robusta Meney & Pate, Desmocladus glomeratus K.W.Dixon & Meney, Lepidobolus basiflorus Pate & Meney, Lepidobolus spiralis Meney & K.W.Dixon, Leptocarpus crassipes Pate & Meney, Loxocarya albipes Pate & Meney and Onychosepalum microcarpum Meney & Pate. An illustration is designated as the lectotype for Loxocarya magna Meney & K.W.Dixon and for Restio isomorphus K.W.Dixon & Meney. Since their original description, Restio isomorphus has been transferred to Chordifex B.G.Briggs & L.A.S.Johnson and Leptocarpus crassipes to Meeboldina Suess. (Briggs & Johnson 1998).

In the protologue of each of these names only the holotype and isotype(s) were cited, although it is evident that other collections were made by the authors. In each case an illustration by E. Hickman, showing features of both male and female plants, was included in the protologue. These illustrations were subsequently also published in the excellent book *Australian rushes: biology, identification and conservation of Restionaceae and allied families* (Meney & Pate 1999).

The original citations indicate that type specimens are housed at K, KPBG, PERTH and SYD. The reference to SYD was intended to be to the National Herbarium of New South Wales (NSW) rather than the University of Sydney Herbarium (SYD). One author of the relevant papers (K. Dixon pers. comm.) confirms that despite comprehensive searching, the cited types for most of the species have not been located at PERTH, KPBG or UWA. Likewise, isotypes cited as housed in K and SYD [NSW], cannot be found.

For those names for which both the holotype and the cited isotype(s) are no longer extant, and no other specimens were cited in the protologue, the lectotype must be chosen (McNeill *et al.* 2006: Art. 9.10) from 'among the uncited specimens and cited and uncited illustrations which comprise the remaining original material, if such exist'. Specimens that we consider to be original material have been located at KPBG (the place of work of K. Meney and K. Dixon), UWA (at J. Pate's former Department) and NSW. The specimens at NSW were sent by these authors to B.G. Briggs and L.A.S. Johnson, who were then also studying Restionaceae. The curators of the KPBG and UWA herbaria have agreed to the transfer to PERTH of those specimens from their collections and they are here designated as lectotypes. Lectotypes at NSW were sufficiently ample to divide so that an isolectotype could be placed in PERTH. The locations of the lectotypes are indicated below.

The International Code of Botanical Nomenclature (Vienna Code) (ICBN, McNeill et al. 2006) states (Article 9.2, Note 2) that the original material includes 'those specimens and illustrations (both unpublished and published either prior to or together with the protologue) upon which it can be shown that the description or diagnosis validating the name was based'. The original material also includes 'isotypes or isosyntypes of the name irrespective of whether such specimens were seen either by the author of the validating description or diagnosis, or the author of the name' (Art. 9.2 Note 2[c]). Uncited specimens may also be original material (Art. 9.10).

Ross (2002) argued that an illustration that forms part of the protologue is not original material unless it was used in the preparation of the validating description and we agree that the wording of Note 2 of Article 9.2 of the ICBN could be interpreted that way. We are, however, here following common practice, as endorsed by the acceptance of a proposal by Silva (1993), and reference in Note 2 of Article 9.2 to illustrations published with the protologue. Thus we have accepted that any illustration cited in the protologue of a name is original material of that name. Although not affecting the names lectotypified here, we note that the designation of an illustration as the type of a name was limited in the current ICBN to names published prior to 1 January 2007 (unless the provisions of Article 37.5 – mainly concerning microscopic organisms – apply). Although the Code permits an illustration to be designated as the lectotype of a name published prior to 1 January 2007, provided that no cited specimens are extant, we consider that specimens should be given priority over illustrations and so we have only designated an illustration as the lectotype of a name if we could not locate any uncited specimens.

In the two cases where an illustration is designated as the lectotype, we have also specified a reference specimen housed at NSW, with a duplicate at PERTH, that is closely linked with the original type gathering, locality and collectors. These representative specimens have no formal status and are not being designated as epitypes. Should one of these illustrations prove to be ambiguous for application of a name at any point in the future, it is recommended that the representative specimen chosen here then be selected as an epitype. These representative specimens are believed to be from the localities where the holotypes were collected, although there are differences in the way the locations are cited.

## Lectotypifications that designate original specimens

**Desmocladus glomeratus** K.W. Dixon & Meney, *Telopea* 6: 649–651, fig. 1 (1996). *Type citation*: 'Northampton (28°21'S, 114°38'E), *Meney* & *Dixon* KM909 (female plant), 10 August 1990 (holotype KPBG; isotype PERTH)' [both lost]. *Type specimen*: north of Geraldton, Western Australia [precise locality withheld for conservation reasons], 10 August 1990, K. *Meney* & K. *Dixon* [as KM/KD] s.n., ∂ (*lecto*, here designated: NSW 779666; *isolecto*: PERTH 07953402).

The lectotype was labelled as 'Loxocarya "glomerata" (Dixon & Meney)' in K.A. Meney's hand and sent by her to Briggs and Johnson at NSW as an example of their new-found species (species of *Desmocladus* were mostly referred to *Loxocarya* at that time). It is thought to be from the gathering upon which the features of male plants, mentioned in the protologue, were based. Despite the difference in locality citation, we believe that the lectotype is from the type location, collected by the relevant authors on the same day as the female specimen originally designated as the type. The protologue states 'The species is known from only one location in sand over laterite in heathland' and cites a specific locality from north-east of Geraldton, which matches the locality of the lectotype rather than the vague locality of 'Northampton' used in the type citation. *Desmocladus glomeratus* is now known to be more widespread.

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 25 Aug. 2006, B.G. Briggs 9684  $\circlearrowleft$  (NSW, MEL, RSA), 9685  $\circlearrowleft$  (NSW, PRE), 9686  $\Lsh$  (NSW, CANB, MEL); 14 Aug. 1991, B.G. Briggs 8887a & L.A.S. Johnson  $\circlearrowleft$  (NSW 246565, PERTH, MO), 8887b  $\updownarrow$ , (NSW); 2 Oct. 1976, D. & N. McFarland NM 1276 (PERTH); 1992, J. Pate s.n.  $\circlearrowleft$ ,  $\updownarrow$  (NSW); 22 Sep. 1976, T. Whaite 4163 & J. Whaite  $\circlearrowleft$  (NSW, CANB, K, PERTH).

Harperia ferruginipes Meney & Pate, *Telopea* 6: 651–653, fig. 2 (1996). *Type citation*: 'between Geraldton (28° 46' S, 114° 37' E) and Mullewa (28° 32' S, 115° 30' E), *Meney & Pate KM9401*, 19 April 1994 (holotype KPBG; isotype PERTH)' [both lost]. *Type specimen*: 'Known only from 3 closely located populations between Geraldton & Mullewa', Western Australia, April 1994, *J.S. Pate s.n.*, *& (lecto, here designated: PERTH 08027900 (ex UWA)).* 

This specimen, collected by one of the authors of the name, was held at UWA (the former department of J. Pate) until transferred to PERTH recently and so it is reasonable to assume that it would have been used in the preparation of the description. It was probably collected from the type locality.

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons], 5 Oct. 1995, B.G. Briggs 9358 [& J.S. Pate] & (NSW, PERTH, MO), 9359 & (NSW, PERTH); 7 Apr. 1992, K.F. Kenneally 11140 (PERTH); May 1994, J. Pate s.n. & (NSW); 29 Aug. 2003, Wildflower Society of WA EURA 131 (PERTH); 3 Oct. 2003, Wildflower Society of WA EURA 132 (PERTH).

**Hypolaena robusta** Meney & Pate, *Telopea* 6: 653, fig. 3 (1996). *Type citation*: 'near Badgingarra (30° 24′S, 115° 33′ E), *Meney* & *Pate KM* 9092, 6 September 1990 (holotype KPBG; isotype PERTH)' [both lost]. *Type specimen*: 'Badgingarra (only known location)', Western Australia, September 1990, *J.S. Pate s.n.* ♀ (+ ♂ fragment) (*lecto*, here designated: PERTH 08027897 (ex UWA)).

This specimen, collected by one of the authors of the name, was held at UWA (the former department of J. Pate) until transferred to PERTH recently and so would have been available to the authors when they were preparing the description.

Selected specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 8 Sep. 1990, B.G. Briggs 8630, L.A.S. Johnson, K. Meney, J. Pate & P. Linder ♂ (NSW); 6 Oct. 1995, B.G. Briggs 9381 & J. Pate ♂ (NSW, PERTH), 9382 ♀ (NSW, PERTH); 24 Aug. 2003, B.G. Briggs 9557a ♂ (NSW, PERTH, PRE); 30 July 1995, M. Hislop 56 (PERTH); 22 Sep. 2002, F. & J. Hort 1811 (PERTH); 21 October 2006, F. & B. Hort 2940 (PERTH); 1 Sep. 1999, M.E. Trudgen 20121 & S. Firth (PERTH, NSW); 2 Oct. 1979, K.L. Wilson 2685 ♂ (NSW).

**Lepidobolus basiflorus** Pate & Meney, *Telopea* 6: 655–656, fig. 4 (1996). *Type citation*: 'between Geraldton (28° 46' S, 114° 37' E) and Mullewa (28° 32' S, 115° 30' E), *Pate & Meney KM9402*, 19 April 1994, (holotype KPBG; isotype PERTH)' [both lost]. *Type specimen*: south-west of Tenindewa, Western Australia [precise locality withheld for conservation reasons], May 1994, *J. Pate s.n.*,  $\delta$  (*lecto*, here designated: NSW 363208, *isolecto*: PERTH 07953151).

This specimen was sent to NSW in 1994 with advice of its proposed name given in correspondence to B.G. Briggs and so is considered to be part of the gatherings studied by the authors prior to publication of the name *Lepidobolus basiflorus*. The protologue states that *L. basiflorus* was then only known from one population, so the lectotype is presumably from the type locality.

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 5 Oct. 1995, B.G. Briggs 9362 & J. Pate  $\Im$  (NSW, PERTH, NBG), 9363  $\Im$  (NSW); May 1994, J. Pate s.n.  $\Im$  (NSW).

**Lepidobolus spiralis** Meney & K.W. Dixon, *Telopea* 6: 656–658, fig. 5 (1996). *Type citation*: 'Frank Hann National Park, east of Lake King (33°05' S, 119°40' E), *Meney & Dixon KM293*, 2 November 1990, (holotype KPBG; isotype PERTH)' [both lost]. *Type specimen*: Lake King—Norseman road, Western Australia [precise locality withheld for conservation reasons], 2 November 1990 [labelled as 4 March 1993], *K. Meney* 293 ♀ (*lecto*, here designated: NSW 267532; *isolecto*: PERTH 07953410).

The localities of the holotype and lectotype are different descriptions of the same general location; the same collection number is given, although the collections were labelled with different dates. K. Meney has confirmed that there is actually only a single gathering involved, collected on 2 November 1990, the duplicate having been sent to B. Briggs on 4 March 1993, hence the date on the lectotype sheet. It was labelled in Meney's hand 'Lepidobolus contortus K. Meney & K. Dixon', an earlier manuscript name for the species; this was not used when the species was named but referred to the same feature of its growth.

Other specimens examined. WESTERNAUSTRALIA: [localities withheld for conservation reasons] 4 Oct. 1995, B.G. Briggs 9349, J. Pate & K. Meney (NSW, PERTH, CANB, AD); cultivated, 2 Nov. 1990, K. Meney 3291 (NSW); 2 Sep. 1988, K. Meney & K. Dixon 814 (KPBG); 2 Nov. 1990, K. Meney & K. Dixon s.n. (KPBG); 13 Nov. 1979, K.R. Newbey 6575 (PERTH).

**Loxocarya albipes** Pate & Meney, *Telopea* 6: 660–662, fig. 7 (1996). *Type citation*: 'Wongan Hills (30° 51' S, 116° 43' E). In a single small gravel pit 15 km W of Wongan Hills. *Pate* & *Meney KM* 9304, 10 August 1993 (holotype KPBG; isotype PERTH)' [both lost]. *Type specimen*: gravel pit, east of Wongan Hills on the Piawaning Road, Western Australia [precise locality withheld for conservation reasons], October 1993, *J. Pate s.n.* ♀ (*lecto*, here designated: NSW 280360, *isolecto*: PERTH 08027609).

A small tag on the lectotype is annotated in Pate's hand 'Adult plants from just outside the gravel pit. Better young fruits than earlier material.' Also, the notes included on the NSW label 'Rhizomes on ground surface, as the coarse gravel will not allow burial. Rhizomes wooly. Female.' come from Pate's field observations. The protologue records the species as known only from a lateritic gravel pit. The protologue and some of the following collections cite an incorrect location; K. Dixon confirms that the lectotype is from the type location. It was sent to NSW after Pate and Meney had studied the new taxon sufficiently to specify its distinctive features, but before the relevant name was published.

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 5 Oct. 1995, *B.G. Briggs* 9353 & *J. Pate*  $\circlearrowleft$  (NSW, PERTH), 9354  $\supsetneq$  (NSW, PERTH), 9355  $\supsetneq$  (NSW); 23 Sep. 1999, *M.J. Fitzgerald* MJF 99/001 (PERTH); Oct. 1993, *J. Pate s.n.*  $\circlearrowleft$  (NSW); Apr. 1994, *J.S.Pate s.n.*  $\circlearrowleft$ ,  $\circlearrowleft$  (UWA).

Meeboldina crassipes (Pate & Meney) B.G.Briggs & L.A.S.Johnson, *Telopea* 8: 30 (1998). – *Leptocarpus crassipes* Pate & Meney, *Telopea* 6: 658–660, fig. 6 (1996). *Type citation*: 'Kent River between Denmark (34° 58' S, 117° 21' E) and Walpole (34° 59' S, 116° 44' E), *Pate & Meney KM913*, 5 January 1991 (holotype KPBG; isotype PERTH)' [both lost]. *Type specimen*: Kent River, Western Australia, 5 January 1991 [but labelled as 1992], *K. Meney* 913 ♂, ♀ (*lecto*, here designated: NSW 409875; *isolecto*: PERTH 07953178); Kent River, Western Australia [precise locality withheld for conservation reasons], 5 January 1991, [*J. Pate &*] *K. Meney s.n.* ♂, ♀ (*isolecto*: PERTH 08027919 (ex KPBG).

Based on label information there appear to be two collections, however, correspondence with K. Meney has confirmed that there is actually only a single collection involved, made on 5 January 1991. A duplicate of this collection was sent to B. Briggs at NSW in 1992, hence the date on the sheet with K.A. Meney's collection number of 913 at NSW, now with a portion at PERTH. The sheet at PERTH ex KPBG does not bear the Meney collection number and does not list Pate as the co-collector, and is thus excluded from being the holotype, however the label represents a deficiency of the hand-written notes on the sheet, and again, K. Meney confirms that it is part of the original (and single) gathering made of this taxon on this day by Pate and Meney, so it must also be considered an isolectotype.

Selected specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons],10 Nov. 2004, R.J. Cranfield & B.G. Ward WFM 233 (PERTH); 18 Mar. 1961, A.S. George 2323 (PERTH); 3 May 1991, N. Gibson & M. Lyons 633–636 (PERTH); 19 Jan. 1992, N. Gibson & M. Lyons 804 (PERTH); no date, J.S. Pate s.n. & (UWA).

Onychosepalum microcarpum Meney & Pate, *Telopea* 6: 664, fig. 9 (1996). *Type citation*: 'Gingin (31° 21' S, 115° 54' E) to Cataby (30° 45' S, 115° 33' E) *Meney* & *Pate KM 9091*, 6 September 90 (holotype KPBG; isotype PERTH).' [Both lost]. *Type specimen*: west of Brand Highway, Western Australia [precise locality withheld for conservation reasons], September 1990, *K. Meney s.n.* & (lecto, here designated: PERTH 08027935 (ex KPBG); *isolecto*: PERTH 08027927 (ex KPBG)).

There are three sheets of specimens that appear to be original material, one housed until recently at UWA and the other two at KPBG. All would have been available to the authors when preparing their description of the species. The locations are differently described but both are consistent with the type locality. The sheets selected as lectotype and isolectotype are a gathering of male plants with more accurate locality information than the *Pate s.n.* collection from Cataby listed below.

Other specimens examined. WESTERN AUSTRALIA: [localities withheld for conservation reasons] 6 Sep. 1990, B.G. Briggs 8583, L.A.S. Johnson, K. Meney, J. Pate & P. Linder, ♀ (NSW, PERTH, BOL, MEL, K), 8582 ♂ (NSW); 6 Oct. 1981, E.A. Griffin 3177 (PERTH, NSW); 7 Nov. 2006, S. Kern & A. Rea 12086 (PERTH); Sep. 1990, J.S. Pate s.n. ♀ (PERTH (ex UWA)); 8 Oct. 1992, J.S. Pate 4093b (NSW); 7 Oct. 1995, B.G. Briggs 9389a, b & J. Pate (NSW).

## Lectotypifications that designate illustrations

**Chordifex isomorphus** (K.W.Dixon & Meney) B.G.Briggs & L.A.S.Johnson, *Telopea* 8: 25 (1998). – *Restio isomorphus* K.W.Dixon & Meney, *Nuytsia* 9: 91, fig. 1 (1993). *Type citation*: 'Scott River along Governor Broome Road and Dennis Road (115° 17' E, 34° 15' S), December 1988, *Meney & Dixon* (KM 110, female plant), (holotype: PERTH; isotype: K, SYD)' [all lost]. *Lectotype*, here designated: illustration in Dixon *et al.*, *Nuytsia* 9: 92, figure 1 (1993).

The representative specimen listed below is from the same broad location as the type collection.

Representative specimen: NNE of Augusta, Western Australia [precise locality withheld for conservation reasons], 11 Sep. 1990, B.G. Briggs 8676, L.A.S. Johnson, K. Meney, P. Linder & J. Pate ♀ (NSW 232888, PERTH 07953186).

Selected specimens examined. WESTERNAUSTRALIA: [localities withheld for conservation reasons] 11 Oct. 2002, S. Barrett 1014 (PERTH); 29 Aug. 1998, B.G. Briggs 9445 (NSW, PERTH); 8 Oct. 1984, B. Briggs 7648 & L. Johnson (NSW, PERTH); 9 Dec. 2003, J.A. Cochrane JAC 4824 (PERTH); 18 Jan. 2000, N. Gibson & K. Dixon 3823 (PERTH); 16 Nov. 1993, N. Gibson & M. Lyons 1543 (PERTH); Sep. 1990, J.S. Pate s.n. ♂, ♀ (UWA); 16 Sep. 2005, E.M. Sandiford EMS 1055 (PERTH).

**Loxocarya magna** Meney & K.W. Dixon, *Telopea* 6: 662–664, fig. 8 (1996). *Type citation*: 'Scott River,' [precise locality withheld for conservation reasons], 'Meney & Dixon KM 109, 8 December 1988 (holotype KPBG; isotype PERTH)' [both lost]. Lectotype, here designated: illustration in Meney et al., Telopea 6: 663, figure 8 (1996).

The protologue states that *Loxocarya magna* was then only known from two small populations at Scott River and Ruabon. The representative specimen is from one of these sites. The different latitude and longitude coordinates given are not surprising with coordinates compiled from maps.

*Representative specimen*: ENE of Augusta, Western Australia (34° 14' S, 115° 16' E) [precise locality withheld for conservation reasons], 11 Sep. 1990, *B.G. Briggs* 8668, *L.A.S. Johnson*, *K. Meney*, *J. Pate* & *P. Linder* ♀ (NSW 232863, BOL, PERTH 02528347).

Selected specimens examined. WESTERNAUSTRALIA: [localities withheld for conservation reasons] 6 Nov. 2001, J.A. Cochrane JAC 3945 (K, PERTH); 11 Dec. 2001, R.J. Cranfield 17646B (CFR. MJP, PERTH); 22 Oct. 1997, R. Davis 4394 (PERTH); 19 Nov. 1991, N. Gibson & M. Lyons 1202 (PERTH); 11 Nov. 1993, B.J. Keighery & N. Gibson 563 (PERTH); 15 Oct. 1992, B.J. Keighery & N. Gibson 705 (PERTH); 29 Sep. 1990, G.J. Keighery 11769 (PERTH); 24 Sep. 1990, G.J. Keighery 12204 (CANB (n.v.), PERTH); 31 May 1995, B.J. Lepschi 1862 (CANB (n.v.), PERTH); Sep. 1993, J.S. Pate s.n. ♂, ♀ (UWA); 10 Sept. 1990, C.J. Robinson 139 (PERTH); Capel, 7 Nov. 2006, F. Smith 44 (PERTH); 22 Oct. 1994, C. Tauss 44 ♂, 45 ♀ (UWA).

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